In the Claims:

Cancel, without prejudice, claims 42 - 46 and 53 - 73, amend claims 36, 39, 41, 47, 50, and 52, and add new claims 74 - 115 as indicated below:

1 - 35. (cancelled)

36 (amended). A soft transition power converter, comprising:

a transformer having a primary winding and a secondary winding forming at least part of a power output side of the power converter;

an alternating current source, comprising a source of DC current and a set of switching elements electrically connecting said source of DC current to said primary winding for producing alternating current in said secondary winding;

a rectifier circuit having an alternating current input for receiving said alternating current and producing a rectified current output at said power output side of the power converter;

a soft transition inductor electrically connecting said source and said primary

winding; and

a source controller adapted to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time.

37 (previously presented). The power converter of claim 36, wherein said rectifier circuit includes a bridge of rectifiers.

38 (previously presented). The power converter of claim 36, wherein said rectifier circuit includes two rectifiers and two capacitors.

39 (amended). The power converter of claim 36, wherein said set of switching elements comprises two pairs of ~~controlled~~ switching elements ~~and a switching element~~ controlled by said source controller, the switching elements of each pair being coupled together in totem pole configuration at corresponding output nodes of the pair, said pairs disposed in parallel relation across said source, the output node of one of said pairs being coupled to one end of said primary winding and the output node of the other of said pairs coupled to the other end of said primary winding, each switching element having a control input coupled to said ~~switching element~~ source controller, ~~said~~

~~switching element controller adapted to produce respective switching element control signals at said control inputs so as to alternately invert the voltage from said DC voltage source across said primary winding~~.

40 (previously presented). The power converter of claim 39, wherein said switching elements are MOSFETS each having respectively a source, a drain, and a gate, wherein said output nodes define respective connections between the source of one of said MOSFETs and the drain of another of said MOSFETs, and wherein said gates correspond respectively to said control inputs.

41 (amended). The power converter of claim ~~40~~ 104, ~~further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time,~~ wherein said source controller is adapted to vary the duty cycle in a constant frequency mode of operation by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer.

42 - 46 (cancelled).

47 (amended). A soft transition power converter, comprising:

a transformer having a primary winding and a secondary winding forming at least part of a power output side of the power converter;

an alternating current source, comprising a source of DC current and a set of switching elements electrically connecting said source of DC current to said primary winding for producing alternating current in said secondary winding;

a rectifier circuit having an alternating current input for receiving said alternating current and producing a rectified current output at said power output side of the power converter; ~~and~~

a first soft transition inductor electrically connecting said secondary winding and said alternating current input of said rectifier circuit[.]; and

a source controller adapted for controlling said alternating current source so as to produce said alternating current by alternating the voltage across said primary winding a first active time during which the voltage is one of positive and negative, thence to a dead time during which the voltage is substantially zero, and thence to a second active time during which the voltage is the other of positive and negative.

48 (previously presented). The power converter of claim 47, wherein said rectifier circuit includes a bridge of rectifiers, and wherein said first soft transition inductor is connected between an end of said secondary winding and an input node of said bridge.

49 (previously presented). The power converter of claim 47, wherein said rectifier circuit includes two rectifiers and two capacitors.

50 (amended). The power converter of claim 47, wherein said set of switching elements comprises two pairs of ~~controlled~~ switching elements ~~and a switching element~~ controlled by said source controller, the switching elements of each pair being coupled together in totem pole configuration at corresponding output nodes of the pair, said pairs disposed in parallel relation across said source, the output node of one of said pairs being coupled to one end of said primary winding and the output node of the other of said pairs coupled to the other end of said primary winding, each switching element having a control input coupled to said ~~switching element~~ source controller~~, said switching element controller adapted to produce respective switching element control signals at said control inputs so as to alternately invert the voltage from said DC voltage source across said primary winding~~.

51 (previously presented). The power converter of claim 50, wherein said switching elements are MOSFETS each having respectively a source, a drain, and a gate, wherein said output nodes define respective connections between the source of one of said MOSFETs and the drain of another of said MOSFETs, and wherein said gates correspond respectively to said control inputs.

52 (amended). The power converter of claim ~~51~~ 105, ~~further comprising a source controller adapted to control said set of switching elements to produce said alternating current by alternating the voltage across said secondary winding from one of a negative ON time during which said voltage is negative and a positive ON time during which said voltage is positive, to a dead time wherein the voltage is substantially zero, and then to the other of said negative ON time and said positive ON time,~~ wherein said source controller is adapted to ~~vary the duty cycle in~~ provide for a constant frequency mode of operation ~~by varying the duration of said positive and negative ON times, for varying the power transferred through said transformer~~.

53 - 73 (cancelled).

74 (new). The power converter of claim 52, wherein said source controller is adapted for controlling said alternating current source in a discontinuous conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

75 (new). The power converter of claim 74, wherein said source controller is adapted for controlling said alternating current source in a critical conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor is transferred to said power output just prior to said second active time.

76 (new). The power converter of claim 74, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of at least one of (a) said first and second active times, and (b) said dead time, for varying the power transferred through said transformer.

77 (new). The power converter of claim 76, wherein said first active time is substantially equal to said second active time.

78 (new). The power converter of claim 52, wherein said source controller is adapted for controlling said alternating current source in a continuous conduction mode of operation of the power converter to produce said alternating current so that a substantial amount of the energy stored in said at least one soft transition inductor during said first active time remains stored in said at least one soft transition inductor at the commencement of said second active time.

79 (new). The power converter of claim 78, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of said first and second active times, for varying the power transferred through the transformer.

80 (new). The power converter of claim 79, wherein said first active time is substantially equal to said second active time.

81 (new). The power converter of claim 105, wherein said source controller is adapted to

provide for a variable frequency mode of operation.

82 (new). The power converter of claim 81, wherein said source controller is adapted for controlling said alternating current source in a discontinuous conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

83 (new). The power converter of claim 82, wherein said source controller is adapted for controlling said alternating current source in a critical conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor is transferred to said power output just prior to said second active time.

84 (new). The power converter of claim 82, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of at least one of (a) said first and second active times, and (b) said dead time, for varying the power transferred through said transformer.

85 (new). The power converter of claim 84, wherein said first active time is substantially equal to said second active time.

86 (new). The power converter of claim 81, wherein said source controller is adapted for controlling said alternating current source in a continuous conduction mode of operation of the power converter to produce said alternating current so that a substantial amount of the energy stored in said at least one soft transition inductor during said first active time remains stored in said at least one soft transition inductor at the commencement of said second active time.

87 (new). The power converter of claim 86, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of said first and second active times, for varying the power transferred through the transformer.

88 (new). The power converter of claim 87, wherein said first active time is substantially equal to said second active time.

89 (new). The power converter of claim 41, wherein said source controller is adapted for controlling said alternating current source in a discontinuous conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

90 (new). The power converter of claim 89, wherein said source controller is adapted for controlling said alternating current source in a critical conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at

least one soft transition inductor is transferred to said power output just prior to said second active time.

91 (new). The power converter of claim 89, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of at least one of (a) said first and second active times, and (b) said dead time, for varying the power transferred through said transformer.

92 (new). The power converter of claim 91, wherein said first active time is substantially equal to said second active time.

93 (new). The power converter of claim 41, wherein said source controller is adapted for controlling said alternating current source in a continuous conduction mode of operation of the power converter to produce said alternating current so that a substantial amount of the energy stored in said at least one soft transition inductor during said first active time remains stored in said at least one soft transition inductor at the commencement of said second active time.

94 (new). The power converter of claim 93, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of said first and second active times, for varying the power transferred through the transformer.

95 (new). The power converter of claim 94, wherein said first active time is substantially equal

to said second active time.

96 (new). The power converter of claim 104, wherein said source controller is adapted to provide for a variable frequency mode of operation.

97 (new). The power converter of claim 96, wherein said source controller is adapted for controlling said alternating current source in a discontinuous conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

98 (new). The power converter of claim 97, wherein said source controller is adapted for controlling said alternating current source in a critical conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor is transferred to said power output just prior to said second active time.

99 (new). The power converter of claim 97, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of at least one of (a) said first and second active times, and (b) said dead time, for varying the power transferred through said transformer.

100 (new). The power converter of claim 99, wherein said first active time is substantially equal to said second active time.

101 (new). The power converter of claim 96, wherein said source controller is adapted for controlling said alternating current source in a continuous conduction mode of operation of the power converter to produce said alternating current so that a substantial amount of the energy stored in said at least one soft transition inductor during said first active time remains stored in said at least one soft transition inductor at the commencement of said second active time.

102 (new). The power converter of claim 101, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of said first and second active times, for varying the power transferred through the transformer.

103 (new). The power converter of claim 102, wherein said first active time is substantially equal to said second active time.

104 (new). The power converter of claim 36, wherein said source controller is adapted to short said primary winding during said dead time.

105 (new). The power converter of claim 47, wherein said source controller is adapted to short said primary winding during said dead time.

106 (new). The power converter of claim 52, further comprising a second soft transition inductor electrically connecting said source and said primary winding.

107 (new). The power converter of claim 106, wherein said source controller is adapted for controlling said alternating current source in a discontinuous conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor during said first active time is transferred to said power output prior to said second active time.

108 (new). The power converter of claim 107, wherein said source controller is adapted for controlling said alternating current source in a critical conduction mode of operation of the power converter to produce said alternating current so that substantially all of the energy stored in said at least one soft transition inductor is transferred to said power output just prior to said second active time.

109 (new). The power converter of claim 107, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of at least one of (a) said first and second active times, and (b) said dead time, for varying the power transferred through said transformer.

110 (new). The power converter of claim 109, wherein said first active time is substantially equal to said second active time.

111 (new). The power converter of claim 106, wherein said source controller is adapted for controlling said alternating current source in a continuous conduction mode of operation of the power converter to produce said alternating current so that a substantial amount of the energy stored in said at least one soft transition inductor during said first active time remains stored in said at least one soft transition inductor at the commencement of said second active time.

112 (new). The power converter of claim 111, wherein said source controller is adapted for controlling said alternating current source so as to vary the duty cycle by varying the duration of said first and second active times, for varying the power transferred through the transformer.

113 (new). The power converter of claim 112, wherein said first active time is substantially equal to said second active time.

114 (new). A method for converting power in a power converter that includes a transformer having a primary winding and a secondary winding, a source connected to said primary winding and adapted to produce alternating electrical current in said secondary winding, a rectifier circuit for receiving and rectifying said alternating electrical current, and at least one soft transition inductor, the method comprising controlling said source so as to produce said alternating current by alternating the voltage across said primary winding a first active time during which the voltage is one of positive and negative, thence to a dead time during which the voltage is substantially zero, and thence to a second active time during which the voltage is the other of positive and negative.

115 (new). The method of claim 114, further comprising shorting said primary winding during said dead time.